

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2017/0006071 A1**
MANDATO et al. (43) **Pub. Date: Jan. 5, 2017**(54) **SPECIFICATION OF A SOFTWARE ARCHITECTURE FOR CAPABILITY AND QUALITY-OF-SERVICE NEGOTIATIONS AND SESSION ESTABLISHMENT FOR DISTRIBUTED MULTIMEDIA APPLICATIONS****Publication Classification**(51) **Int. Cl.**
H04L 29/06 (2006.01)
(52) **U.S. Cl.**
CPC H04L 65/1069 (2013.01); H04L 65/80 (2013.01)

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- (21) Appl. No.: **15/162,135**
- (22) Filed: **May 23, 2016**

Related U.S. Application Data

- (60) Continuation of application No. 14/962,845, filed on Dec. 8, 2015, now abandoned, which is a continuation of application No. 13/958,157, filed on Aug. 2, 2013, now abandoned, which is a division of application No. 10/532,311, filed on Jul. 24, 2006, now Pat. No. 8,549,143, filed as application No. PCT/EP03/11439 on Oct. 15, 2003.

Foreign Application Priority Data

Oct. 23, 2002 (EP) 02023836.6
Dec. 9, 2002 (EP) 02027408.0

(57) **ABSTRACT**

The underlying invention generally relates to the field of mobile computing in a wireless mobile networking environment with distributed multimedia applications (130). More specifically, it is directed to the field of Quality-of-Service (QoS) management for adaptive real-time services running on mobile devices and an End-to-End Negotiation Protocol (E2ENP) based on a novel usage of a session-layer protocol (SIP) in conjunction with extensions of a session description protocol implementation (SDP, SDPng) and the Extensible Markup Language (XML) for defining user profile and terminal capability information which allow to enforce and use hierarchical QoS Contract specifications.

Thereby, said End-to-End Negotiation Protocol (E2ENP) is applied to derive negotiable information, which enables a prenegotiation, fast negotiation and a fast, dynamic renegotiation of the end-to-end quality and capabilities for a telecommunication session, for multiple configurations of two or a multiplicity of end peers and/or middleware in a consistent, reliable, and incremental way by enabling the mobile applications to efficiently and timely react to QoS violations. Furthermore, the invention pertains to the concept and realization of a novel E2ENP User Agent (128) which encapsulates the signaling part of E2ENP and expresses the information to be negotiated in an interchangeable format in such a way that heterogeneous applications (130) can easily agree on a reference model applied to orchestrate local, peer, and network resources according to the preferences and profiles of the respective user in a coordinated manner. According to one embodiment of the invention, the employed E2ENP sessionlayer protocol Application Programming Interfaces (101a-e) are independent of the actually used session-layer protocol and session description protocol implementations.

